

What is claimed is:

1 1. A packaged micro electrical mechanical system (MEMS) device, comprising
2 a packaging within which is mounted at least one optical MEMS device; and
3 at least two distinct integrated circuit chips, a first one of said integrated circuit
4 chips containing low-voltage digital-to-analog converters and a second one of said
5 integrated circuit chips containing high-voltage amplifiers, said at least two distinct
6 integrated circuits being mounted upon said packaging.

1 2. The invention as defined in claim 1 wherein said high voltage is any voltage
2 level higher than said low voltage, said low voltage being a supply voltage of said first
3 one of said integrated circuit chips containing low-voltage digital-to-analog converters

1 3. The invention as defined in claim 1 wherein at least one of said at least two
2 distinct integrated circuit chips is directly mounted upon said packaging.

1 4. The invention as defined in claim 1 wherein at least one of said at least two
2 distinct integrated circuit chips is indirectly mounted upon said packaging.

1 5. The invention as defined in claim 1 wherein at least one of said at least two
2 distinct integrated circuit chips is mounted on a multi-chip module which is mounted
3 upon said packaging.

1 6. The invention as defined in claim 1 wherein said at least one optical MEMS
2 device includes micro mirrors.

1 7. The invention as defined in claim 6 wherein said micro mirrors are arranged to
2 reflect light approaching said packaging from a first side thereof and at least one of said
3 integrated circuits is mounted to the side of said packaging that is opposite to said first
4 side.

1 8. The invention as defined in claim 6 wherein said micro mirrors are arranged to
2 reflect light approaching said packaging from a first side thereof and at least one of said
3 integrated circuits is mounted to said first side.

1 9. The invention as defined in claim 6 wherein said micro mirrors are arranged to
2 reflect light approaching said packaging from both a first side thereof and a second side
3 thereof and at least one of said integrated circuits is mounted to said first side and at least
4 another of said integrated circuits is mounted to said second side.

1 10. The invention as defined in claim 6 wherein said high-voltage amplifiers are
2 adapted to supply driving voltages for controlling a position of said micro mirrors.

1 11. The invention as defined in claim 1 further comprising wires routed on said
2 packaging whereby at least one interconnection is made between said integrated circuit
3 chips.

1 12. The invention as defined in claim 1 further comprising wires routed on said
2 packaging whereby at least one interconnection is made between said at least one said
3 MEMS device to one of said integrated circuits.

1 13. The invention as defined in claim 1 further comprising at least one electrical
2 connector coupling said at least one of said integrated circuit physically to said packaging
3 and electrically to said MEMS device.

1 14. The invention as defined in claim 1 further comprising at least one electrical
2 connector coupling at least one of said integrated circuit physically to said packaging and
3 electrically to another of said integrated circuits.

1 15. The invention as defined in claim 1 further comprising at least one connector
2 adapted to mount at least one of said integrated circuit chips on said packaging.

1 16. The invention as defined in claim 15 wherein said at least one connector is
2 integrated with said packaging.

1 17. The invention as defined in claim 1 further at least one connector coupled to
2 at least one of said integrated circuit chips and being adapted for mounting said at least
3 one integrated circuit on said packaging.

1 18. The invention as defined in claim 1 wherein at least one of said integrated
2 circuits includes demultiplexing circuits.

1 19. The invention as defined in claim 1 further comprising at least a third
2 integrated circuit chip electrically coupled to at least one of said at least two integrated
3 circuit chips, said third integrated circuit chip being mounted to said packaging and
4 including demultiplexing circuits.

1 20. The invention as defined in claim 19 wherein said third integrated circuit
2 chips is directly mounted upon said packaging.

1 21. The invention as defined in claim 19 wherein at least one of said at least two
2 distinct integrated circuit chips is indirectly mounted upon said packaging.

1 22. The invention as defined in claim 19 wherein said third integrated circuit
2 chips is mounted on a multi-chip module which is mounted upon said packaging.

1 23. The invention as defined in claim 19 wherein said third integrated circuit
2 chips is mounted on a multi-chip module upon which is also included at least one of said
3 at least two distinct integrated circuit chips, said multi-chip module being mounted upon
4 said packaging.

1 24. A packaged micro electrical mechanical system (MEMS) device, comprising
2 a packaging within which is mounted micro mirrors contained within at least one
3 MEMS device, said packaging being adapted to have mounted thereon at least two
4 distinct integrated circuit chips, a first one of said integrated circuit chips containing low-
5 voltage digital-to-analog converters and a second one of said integrated circuit chips
6 containing high-voltage amplifiers.

1 25. A packaged micro electrical mechanical system (MEMS) device, comprising
2 means for packaging least one optical MEMS device; and
3 means for mounting upon said means for packaging at least two distinct integrated
4 circuit chips, a first one of said integrated circuit chips containing low-voltage digital-to-
5 analog converters and a second one of said integrated circuit chips containing high-
6 voltage amplifiers.

1 26. The invention as defined in claim 25 wherein said at least one optical MEMS
2 device contains at least one micro mirror.

1 27. The invention as defined in claim 25 further comprising means for electrically
2 coupling at least one of said at least two distinct integrated circuit chips to said at least
3 one optical MEMS device.

1 28. The invention as defined in claim 25 further comprising means for electrically
2 coupling one of said at least two distinct integrated circuit chips to at least another of said
3 at least two distinct integrated circuit chips.

1 29. The invention as defined in claim 25 further comprising means for mounting
2 upon said means for packaging at least one integrated circuit chip that performs
3 demultiplexing.

1 30. A method for forming a packaged micro electrical mechanical system
2 (MEMS) device, the method comprising the steps of:
3 mounting at least one optical MEMS device within a package; and

4 mounting at least two distinct integrated circuit chips to said package, a first one
5 of said integrated circuit chips containing low-voltage digital-to-analog converters and a
6 second one of said integrated circuit chips containing high-voltage amplifiers.

1 31. The invention as defined in claim 30 further comprising the step of placing
2 said first and said second integrated circuits within a module prior to mounting them to
3 said package in said step of mounting at least two distinct integrated circuit chips to said
4 package.

1 32. The invention as defined in claim 30 wherein said micro electrical mechanical
2 system (MEMS) device is optically coupled to at least one other device to form a system
3 that has been trained, said method further comprising the steps of:

4 replacing one of said first and second integrated circuits so that said system
5 operates as it did prior to executing said replacing step without requiring said system to
6 be trained after said replacing step.

1 33. The invention as defined in claim 30 wherein said micro electrical mechanical
2 system (MEMS) device is optically coupled to at least one other device to form a system
3 that has been trained, and wherein one of said first and second integrated circuits when
4 supplied with each of a set of first prescribed values as an input generates a respective
5 corresponding output, said method further comprising the steps of:

6 replacing one of said first and second integrated circuits; and

7 employing a set of replacement prescribed values with each value in said set of
8 replacement prescribed values having a respective corresponding prescribed value in said
9 set of first prescribed values, each of said replacement prescribed values being such as to
10 cause said replaced one of said first and second integrated circuits to supply the same
11 output as said one of said first and second integrated circuits which was replace would
12 have supplied had the corresponding value of said set of first prescribed values was
13 supplied to said replaced one of said first and second integrated circuits;

14 whereby no training is required after said replacing step.

1 34. A packaged micro electrical mechanical system (MEMS) device, comprising
2 a packaging within which is mounted at least one optical MEMS device, said
3 packaging being adapted to have mounted thereon at least one integrated circuit chip, said
4 packaging being adapted to maintain said at least one optical MEMS device in a
5 prescribed optical relationship with at least one other optical component.

1 35. The invention as defined in claim 34 wherein said at least one integrated
2 circuit comprises at least a first integrated circuit chip containing low-voltage digital-to-
3 analog converters and a second integrated circuit chip containing high-voltage amplifiers.

1 36. The invention as defined in claim 34 wherein said at least one integrated
2 circuit includes circuitry of at least one of the type of the set consisting of low-voltage
3 digital-to-analog converters, high-voltage amplifiers, and demultiplexers.